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General Electric Company

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Phase 2 Final Design Report for 2013

Addendum No. 3 – CU59 and CU60 Design Revisions

Hudson River PCBs Superfund Site

August 2013

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Hudson River PCBs Superfund Site

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B0031087.0003

Date:
August 2013

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CD ROM (electronic files)

- 2013 FDR, Addendum 3 – PDF files
- Revised Dredge Prism XYZ File – CU60
- Shapefiles (Certification Units, shoreline)

1. Introduction

This report, prepared on behalf of the General Electric Company (GE), constitutes an addendum to the Phase 2 Final Design Report for 2013 (2013 FDR; ARCADIS 2013), which was approved by the United States Environmental Protection Agency (EPA) on May 1, 2013. This addendum (2013 FDR Addendum 3) presents certain design revisions for dredging operations to be conducted in Certification Unit (CU) 59 and CU60, located in Reach 8 immediately upstream of Thompson Island Dam, as shown on Figure 1-1.

The revisions presented in this addendum for CU59 and CU60 reflect updates to the design based on recent survey information collected along the western shore of CU60 and based on safety considerations associated with work to be conducted in close proximity to Thompson Island Dam. A summary of the design revisions is presented in Section 2.

2. Design Revisions Summary – CU59 and CU60

This section provides a summary of design revisions for CU59 and CU60.

2.1 Shoreline and CU Revisions

As described in the 2013 FDR, the shoreline in Reach 8 (the Thompson Island Pool) is defined as an elevation 119 ft North American Vertical Datum of 1988 (NAVD88). As also noted in that FDR, a land survey of that shoreline elevation was conducted for Reach 8 to verify the shoreline location in those areas where CUs were identified. Subsequent to the 2008 shoreline survey activities, the boundaries of CU60 were expanded based on the results of data gap sampling (as summarized in Section 3.1.3 of the 2013 FDR). Due to the lack of available shoreline survey information, the shoreline limits for the expanded portions of CU60 were established based on aerial photography taken in the spring of 2002, corresponding to a river flow of approximately 5,000 cubic feet per second (cfs) at Fort Edward.

Field observations during 2013 in preparation for dredging operations in CU60 indicated that portions of CU60 were above the established 119 ft shoreline elevation. Therefore, in August 2013, GE retained Van Dusen & Steves Land Surveyors to conduct a land survey of the 119 ft NAVD88 shoreline elevation along the western shore of the river in the vicinity of CU60.

Based on the results of the August 2013 survey, the shoreline boundary and the shoreline extent of CU60 were adjusted to correspond with the surveyed location of the 119 ft elevation. Electronic data files with the updated shoreline coordinates and the updated CU boundaries are provided on the CD-ROM included with this addendum. The updated shoreline and CU boundaries have been incorporated into the revised Contract 42A drawings included in Appendix 2.

The Design Dredge Prism XYZ File for CU60 was revised to incorporate the updated shoreline and CU limits. The revised electronic Design Dredge Prism XYZ file for CU60 is provided on the CD-ROM included with this addendum. Table 2-1 below presents the revised area, design cut volume, and estimated PCB mass for CU60 based on the revised shoreline and CU limits. The engineering adjustments to the Elevation of Contamination (EoC) surface for CU60 are illustrated on a figure included in Attachment A.

Table 2-1 CU60 Area, Estimated PCB Mass, and Design Volume

CU	CU Area (acres)	EoC Surface Volume (cy)	Estimated PCB Mass (kg)		Design Dredge Prism Volume (cy)
			Total PCBs	Tri+ PCBs	
60	5.41	19,400	880	240	14,200

2.2 Near-Dam Operations – Design Revisions

CU59 and CU60 are located downstream of the New York State Canal Corporation (NYSCC) dam safety warning cable in close proximity to the Thompson Island Dam. As described in the 2013 FDR, Specification Section 01350 (Health and Safety) established a no-work zone extending a minimum of 200 feet upstream from any dam. Specification Section 01350 also includes requirements for all contractors to develop a Near Dam River Operations Plan and provides that the contractor may extend the no-work zone more than 200 feet upstream of each dam based on the contractor's evaluation of required activities, site conditions, and required equipment, and an assessment of where the contractor believes that its operations cannot be implemented safely. Near Dam River Operations Plans were developed by the various contractors who will perform work in the restricted area below the dam safety cable.

In conjunction with the contractors' development of their Near Dam River Operations Plans, GE conducted a safety risk analysis with an independent risk assessor to evaluate the risks associated with work near the Thompson Island Dam. This risk evaluation reviewed the hazards and potential consequences associated with the various aspects of the work near the dam and considered the people and property downstream of the dam, the dredge crew and equipment, the support personnel and equipment including sampling and oversight crews, and the dam structure. Based on this assessment of safety risks and input from the contractors who will perform the work, design revisions have been made to reduce higher risk work in close proximity to the dam. The design revisions for CU59 and CU60 include the following:

- Consistent with Item 4.a.v in Section 2.4.3 of the Critical Phase 2 Design Elements (Phase 2 CDE) (EPA 2010), the entire portion of CU60 located along the eastern shore of the river immediately upstream of Thompson Island Dam East will be excluded from the dredge prisms due to safety concerns related to working in close proximity to the dam. This particular portion of CU60 is approximately 60 feet to 500 ft from the dam, is on an 'S' curve in the river, handles most of the volume of water (there is an east and west dam), and river bottom is rock which makes spudding and anchoring unpredictable if not impossible. This exclusion

area has been incorporated into the design considering the amount of high-risk work that would otherwise be required in this area. The Design Dredge Prism XYZ File has been revised to incorporate the exclusion of this area in CU60. The updated electronic Design Dredge Prism XYZ file for CU60 is provided on the CD-ROM with this addendum. Table 2-2 below provides estimates of the sediment volume and PCB mass associated with the dam offset. Attachment A includes a figure showing the extent of the offset.

Table 2-2 Thompson Island Dam Exclusion Area Offset

Parameter		CU60 Thompson Island Dam Safety Offset
CU Area (acres)		2.08
Sediment Volume (cy)		7,300
PCB Mass (kg)	Total PCBs	300
	Tri+ PCBs	85
Average PCB Surface Concentration (mg/kg)	Total PCBs	48
	Tri+ PCBs	17

- Post-dredging bathymetric surveys will not be conducted by a third-party bathymetric surveyor following dredging in CU59 and CU60. Instead, post-dredging bathymetric surveys conducted by the Dredging Contractor in CU59 and CU60 will be used to confirm the removal of sediment to the required elevations. This revision has been incorporated into the design to eliminate risks associated with performing third party surveying activity in CU59 and CU60 by not requiring duplicative survey efforts (equipment and crews) in the area near the dam. Specification Section 13803 (Dredging) in Appendix 1 has been revised to include this requirement.

- Dredging in CU60 will only consist of one dredging pass (i.e., the design-cut pass). Residual sediment core sampling will not be conducted in CU60 after the design dredging pass. Instead, a dredging overcut of 1 foot will be incorporated into the design pass in CU60. To accomplish this, the required elevations in the Construction Dredge Prism XYZ File will be set 1 foot below the elevations identified in the Design Dredge Prism XYZ File (with the exception of shoreline cuts which will remain at 2 feet below the shoreline elevation). It is estimated that the proposed overcut will increase the design pass removal volume by approximately 5,000 cubic yards in CU60. Following verification that the required elevations in the Construction Dredge Prism XYZ File are achieved, backfill material will be placed in the dredged areas. No isolation caps will be placed in

CU60. This revision has been incorporated into the design to eliminate risks associated with subsequent dredging passes and reduce the amount of work (and time) required in close proximity to the dam as part of the dredging operations (i.e., related to multiple dredging passes, multiple survey efforts, and sediment core sampling). Specification Section 13803 (Dredging) in Appendix 1 has been revised to incorporate this approach for dredging CU60.

- Riverine fringing wetland (RFW) areas disturbed during the dredging operations will be restored at their current locations as described in the 2013 FDR, except that erosion control fabric will not be placed in the RFW construction areas in CU59 and CU60. Installation of the fabric in the RFW construction areas requires personnel to physically enter the water, which would present an unnecessary risk in areas near the dam and has the potential to foul propellers on vessels, potentially causing the operator to lose control of the vessel. This revision has been incorporated into the design to eliminate risks associated with performing this activity in CU59 and CU60. The RFW construction area locations in CU59 and CU60 are identified on revised Drawings B-2316 and B-2317 (Appendix 2). A new drawing, Drawing B-2130 (Appendix 2), has been included in the design to show details and an example cross-section for RFW construction areas in CU59 and CU60.

- Post-backfill and/or cap placement bathymetric surveys will not be conducted following the placement of backfill and/or cap material in CU59 or CU60. Instead, verification that backfill and cap material has been placed in CU59 and CU60 to the specified requirements will be based on placing a minimum volume of each backfill component in the appropriate locations using material volumetric estimates as well as field observations by the Construction Manager. The elevation of backfill and/or cap material will also be checked by touching the bucket to the top of the placed material and verifying the material has been placed to within the required tolerance. This revision has been incorporated into the design to eliminate risks associated with performing multiple survey iterations in CU59 and CU60. Specific requirements for backfill and cap material verification in CU59 and CU60 have been incorporated into the revised version of Specification Section 13720 (Backfilling/Capping) in Appendix 1.

- Pre-planting surveys will not be conducted in CU59 and CU60 prior to RFW habitat construction. Instead, the RFW habitat construction areas in CU59 and CU60 will be based on the areas identified in the habitat construction design, which will be submitted to EPA for review prior to the 2014 planting season. In addition, the planting contractor and Construction Manager will conduct an inspection or the

RFW habitat areas at the time of planting to confirm that they remain suitable. This revision will be incorporated into the design to eliminate risks associated with performing a separate pre-planting survey in CU59 and CU60. A revised version of Specification Section 13704 (Planting of Aquatic Vegetation Beds) issued with the 2013 FDR will be submitted to EPA for review prior to the 2014 planting season to remove the pre-planting survey requirement in CU59 and CU60.

- SAV planting will not be performed in CU 59 and CU60. Instead the SAV areas will be relocated to alternate locations above the NYSCC safety cable within the Thompson Island Pool. This revision will be incorporated into the design to eliminate risks associated with requiring divers to be in the water below the NYSCC safety cable and above the dam and will eliminate risks associated with the equipment and tending crews required to support the divers. The SAV planting areas for 2014 will be identified in the habitat construction design, which will be submitted to EPA for review prior to the 2014 planting season.

- RFW planting in CU59 and CU60 will only be performed in areas that can be accessed by wading into the river from upland areas. Areas that cannot be accessed by wading into the river from upland areas to complete the RFW planting will not be planted. If necessary, GE will identify and propose alternate RFW planting areas as part of the habitat construction design to be submitted to EPA for review prior to the 2014 planting season.

3. References

ARCADIS of New York, Inc. (ARCADIS). 2013. Phase 2 Final Design Report for 2013 for the Hudson River PCBs Superfund Site (2013 FDR). Prepared for General Electric Company, Albany, NY. Revised April.

EPA (U.S. Environmental Protection Agency). 2010. Revised Statement of Work for Remedial Action and Operations, Maintenance, and Monitoring (SOW Appendix B to RA CD), including attachments. December.

4. Acronyms and Abbreviations

ARCADIS	ARCADIS of New York, Inc.
CDE	Critical Design Elements
cfs	cubic feet per second
CU	Certification Unit
cy	cubic yards
EoC	Elevation of Contamination
EPA	U.S. Environmental Protection Agency
FDR	Final Design Report
ft	feet
GE	General Electric Company
kg	kilogram
mg/kg	milligrams per kilogram
NAVD88	North American Vertical Datum of 1988
PCB	polychlorinated biphenyl
RA CD	Remedial Action Consent Decree
RFW	riverine fringing wetland
SOW	Statement of Work
Tri+ PCBs	PCBs with three or more chlorine atoms

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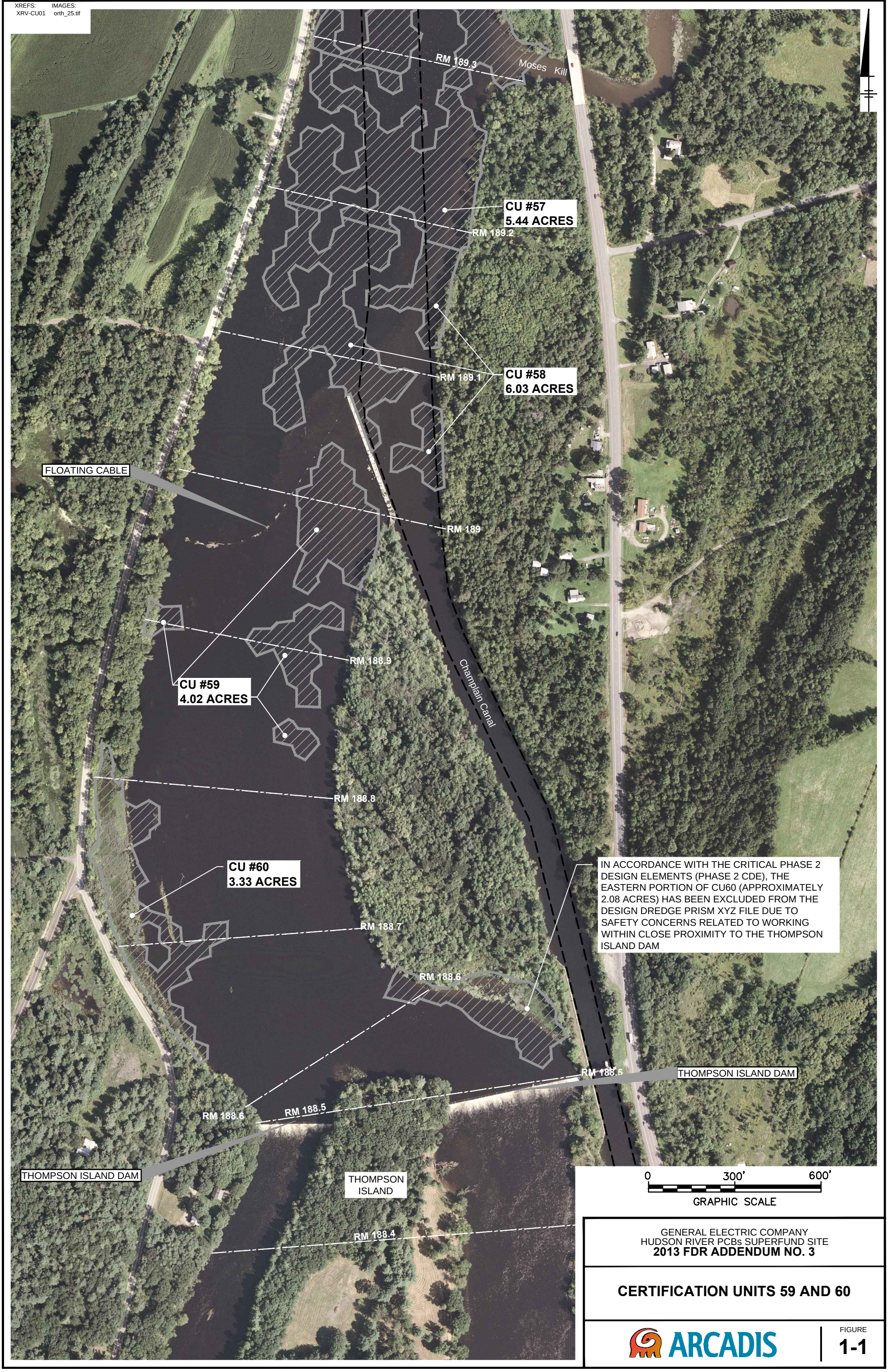

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GRAPHIC SCALE

GENERAL ELECTRIC COMPANY
HUDSON RIVER PCBs SUPERFUND SITE
2013 FDR ADDENDUM NO. 3

CERTIFICATION UNITS 59 AND 60

ARCADIS

FIGURE
1-1

Attachment A

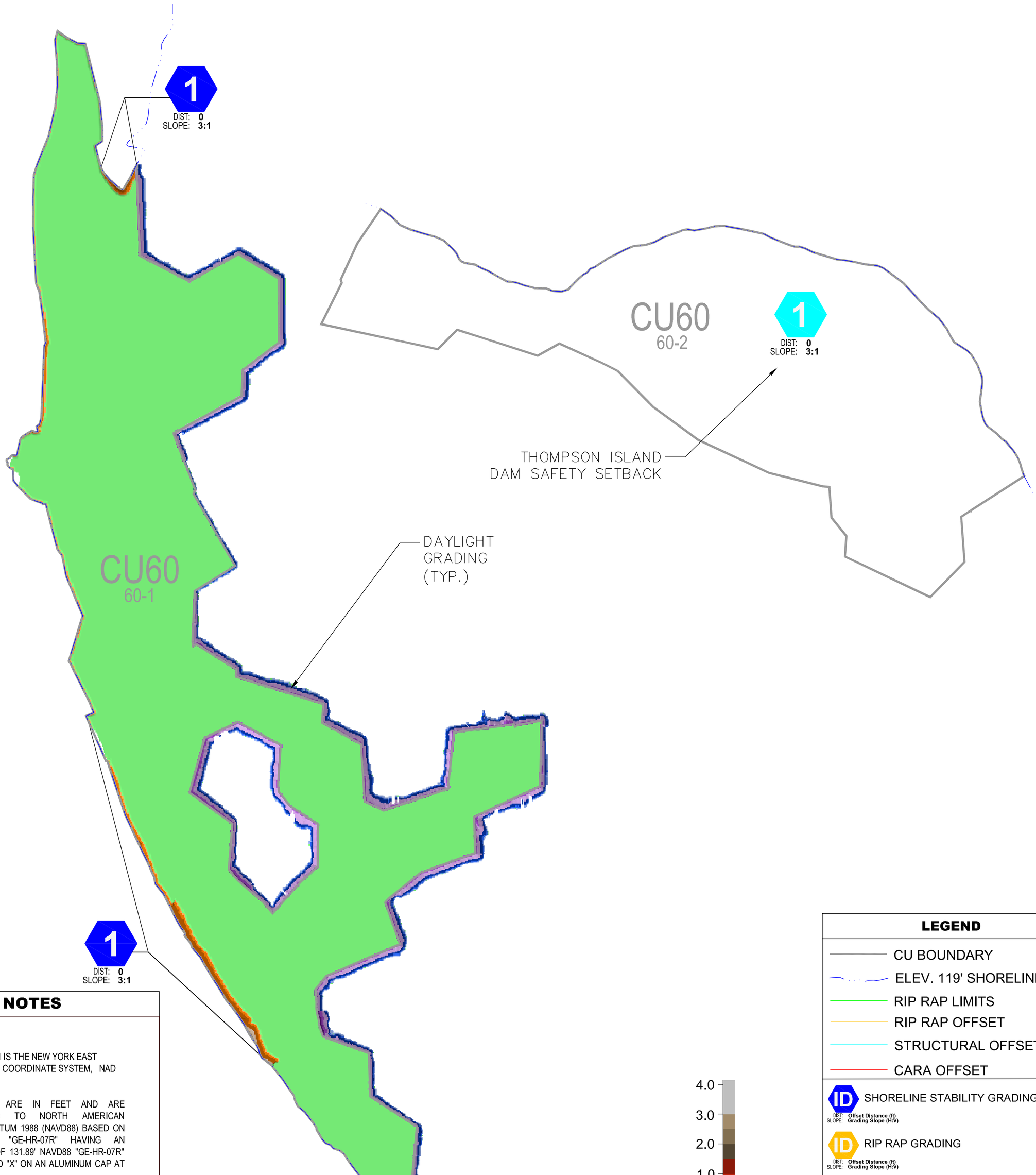
CU60 Dredge Prism Engineering Considerations

TABLE 1-ENGINEERING ADJUSTMENTS SHORELINE STABILITY

ID	LOCATION	VOLUME (CY)
1 DIST: 0 SLOPE: 2-3:1	CU60, West Shore	−105

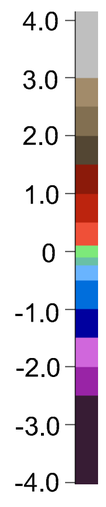
TABLE 2-ENGINEERING ADJUSTMENTS STRUCTURAL OFFSETS

ID	LOCATION	VOLUME (CY)
1 DIST: 0 SLOPE: 3:1	CU60, Thompson Dam Offset	−7253



NOTES

1. GRID SYSTEM IS THE NEW YORK EAST STATE PLANE COORDINATE SYSTEM, NAD 83.
2. ELEVATIONS ARE IN FEET AND ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88) BASED ON BENCHMARK "GE-HR-07R" HAVING AN ELEVATION OF 131.89' NAVD88 "GE-HR-07R" IS A CHISELED "X" ON AN ALUMINUM CAP AT LOCK 7.
3. 119' SHORELINE, DATED AUGUST 13, 2013, AS PROVIDED BY AQEA. ERSI SHAPEFILE: Hudson_River_Shoreline_polygon_20130812.zip.
4. ELEVATION OF CONTAINMENT (EoC) DATED AUGUST 21, 2012 AS PUBLISHED BY AQEA. RASTER FILE: MG_CU55-60_20120821.
5. DREDGE PRISM AS DEVELOPED BY PARSONS. XYZ TEXT FILE: CU60_DP_FDR1_2013_08_13.csv



ELEVATION DIFFERENCE (FT)
DREDGE PRISM
MINUS
MARRIED GRID

LEGEND

- CU BOUNDARY
- ELEV. 119' SHORELINE
- RIP RAP LIMITS
- RIP RAP OFFSET
- STRUCTURAL OFFSET
- CARA OFFSET

ID SHORELINE STABILITY GRADING
DIST: Offset Distance (ft)
SLOPE: Grading Slope (H:V)

ID RIP RAP GRADING
DIST: Offset Distance (ft)
SLOPE: Grading Slope (H:V)

ID STRUCTURAL GRADING
DIST: Offset Distance (ft)
SLOPE: Grading Slope (H:V)

ID CARA GRADING
DIST: Offset Distance (ft)
SLOPE: Grading Slope (H:V)

ID 2' SHORELINE CUT GRADING
DIST: Offset Distance (ft)
SLOPE: Grading Slope (H:V)

ID INTERNAL SLOPE GRADING
DIST: Offset Distance (ft)
SLOPE: Grading Slope (H:V)

DESIGNED: MWB						
DRAWN: MWB						
CHECKED: AJM						
APPROVED: AJM						
DATE: DATE	REV.	DATE	BY	SUB	APP.	DESCRIPTION

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GE HUDSON RIVER DREDGE PROJECT

CU60
ENGINEERING CONSIDERATIONS
2013 DREDGE PRISM

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CONTRACT SHEET NO.
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